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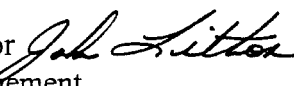
Memorandum

SUBJ: Evaluation of the **Charleston Air Force Base's** status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)

EPA I.D. Number: SC3 570 024 460

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CC: Caron Falconer, USEPA Region 4
Rick Richter, Trident EQC District

Date: August 26, 2002

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Charleston Air Force Base's status in relation to the following corrective action event code defined in the Resource Conservation and Recovery Information System (RCRIS):

1. Current Human Exposures Under Control (CA725),
2. Migration of Contaminated Groundwater Under Control (CA750).

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the second evaluation for Charleston Air Force Base. The previous evaluation resulted in a determination of IN for CA725 and NO for CA750. The evaluation is based on investigations conducted since the 1998 EI evaluation for CAFB, which indicated that more information was needed prior to determining the status of human exposures (CA725) and that groundwater contamination at or emanating from the facility was not controlled (CA750).

Additional investigation implied that human exposures were not controlled, though the determination was unclear. The Department determined that additional investigation was needed prior to revision of the EI memo. Though the evaluation was not revised to change the CA725 from IN to NO, dates were entered into the EI schedule to document the Department's concern that human exposures may not be controlled.

III. FACILITY SUMMARY

Charleston Air Force Base (CAFB) lies within the City of North Charleston in Charleston County, South Carolina. The Base lies approximately 10 miles northwest of the City of Charleston.

In 1931 the City of Charleston purchased a small, privately owned airfield to support commercial air service to the region. In 1941 the Army Air Corps took temporary control of the airfield after the Japanese attack on Pearl Harbor. Civilian use of the airfield was not discontinued during this period. The facility was used by military for training combat and ground crews and training of bomber forces throughout the remainder of World War II. In 1946, after WWII ended, the property was returned to the City of Charleston.

In 1947, the City completed construction of a new municipal airport facility. Portions of the old airfield were leased to private businesses until the City and the Air Force agreed to establish a troop carrier base in 1952. The Base was utilized during the Korean War as part of the Military Air Transport Service (MATs). The Air Force began construction of facilities west of the existing facilities. The MATs became the Military Airlift Command (MAC) in 1966, and was changed to Air Mobility Command (AMC) in 1992 under which CAFB's current jurisdiction lies. The Base is currently under the jurisdiction of the AMC. The 437th Airlift Wing Commander is the current host command at CAFB. The primary mission of the 437th is to maintain immediate airlift capability to deliver and sustain air and combat forces to combat locations. During peacetime, operations include resupply of overseas American embassies and military installations and supply of aid to natural disaster areas.

The Base is currently comprised of 3,731 acres of contiguous property. Base land use consists of airfield and mission support, recreational, industrial, medical, administrative,

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and military housing. Approximately 4600 active-duty military personnel, 2900 reservists and 1255 civilians are assigned to or employed by CAFB.

The CAFB was issued a RCRA Part B permit on September 30, 1991. In June 1999, CAFB decided not to pursue permit renewal for their four hazardous waste storage tanks. The four tanks were closed in accordance with R.61-79.264. These tanks continue to store used oils and fuels that are routinely tested and consistently meet the used oil specifications for on-specification used oils. In October 1999, the facility was issued an operating permit for their regulated unit, a hazardous waste container storage facility (effective November 14, 1999). The current permit was last modified on September 4, 2001.

The regulated unit consists of seven (7) areas, Pads A through G, located within buildings A and B. The maximum permitted volume of the regulated unit is 11,770 gallons. The facility has a secondary containment capacity of 15,071 gallons. The types of waste stored in the storage areas are: fuel products wastes, used oil wastes, paint wastes, sealant wastes, solvent wastes, wastes with expired shelf life and other process wastes. The permit identifies 148 SWMUs and 19 AOCs. Of these, 92 are undergoing RFI, 54 require NFA, and 14 are being investigated under RCRA Subtitle I.

IV. CONCLUSION FOR CA725

As explained in Attachment 1, because human exposures to contamination are currently controlled for soil, groundwater, and surface water, it is recommended that CA725 YE be entered into RCRA Info.

V. CONCLUSION FOR CA750

Because migration of groundwater contamination is not controlled, it is recommended that CA750 NO remain in RCRA Info. However, the goal for a determination of CA750 YE is June 30, 2003. The Department anticipates this goal will be met.

VI. SUMMARY OF FOLLOW-UP ACTIONS

Because a determination of CA725 YE has been made, there are no follow up actions (regarding human exposures) required at this time. However, a determination of CA750 NO has been made. Follow-up actions are being addressed and are expected to be met by June 30, 2003.

Attachments: 1. CA725: Current Human Exposures Under Control

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ATTACHMENT 1

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
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Current Human Exposures Under Control

Facility Name: Charleston Air Force Base
Facility Address: Charleston, South Carolina 29404-4827
Facility EPA ID #: SC3 570 024 460

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

 X If yes - check here and continue with #2 below,

 If no - re-evaluate existing data, or

 If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably

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expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives, which are currently being used as Program measures for the Government Performance and Results Act (GPRA) of 1993. The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action programs overall mission, to protect human health and the environment, requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be "**contaminated**"¹ above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

| Media | Yes | No | ? | Rationale/Key Contaminants |
|-------------|-----|----|---|----------------------------|
| Groundwater | X | | | Rationale provided below |
| | | | | |

¹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and

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| Media | Yes | No | ? | Rationale/Key Contaminants |
|-------------------------------|-----|----|---|----------------------------|
| Air (indoors) ² | | X | | |
| Surface Soil (e.g., <2 ft) | | X | | |
| Surface Water | | X | | |
| Sediment | | X | | |
| Subsurface Soil (e.g., >2 ft) | | X | | |
| Air (outdoors) | | X | | |

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

 X If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

In 1997, source removals at SWMUs 74, 114, 137, 138 and 144 were conducted. Based on analytical data obtained subsequent to the excavations, human exposures at these sites are under control. The Department approved SWMUs 74, 114, 138 and 144 for NFA, which is reflected in the most recent permit modification. CAFB elected to address all pesticide contamination in groundwater associated with SWMUs 114 and 138 with SWMU 137 investigation and remediation (within Zone 2).

The SWMU 68 Final Phase II RFI Report was submitted in 2001 and conditionally approved by the Department on April 17, 2002. Phase II RFI field activities at SWMU 68 included a cover thickness and lateral delineation study, groundwater monitoring well installation, and sampling site media. During this investigation it was determined that SWMU 68 has an existing average cover thickness of 1.5 ft. Results of the Human

adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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Health Risk Assessment indicated that there are no significant risks associated with exposure to media by human receptors under current or future conditions. Exposed debris at this site has also been removed. CAFB is in the design phase of installing a landfill cover (to include an 18" infiltration layer and a 12" vegetated topsoil layer). The Department anticipates submittal of the CAFB Interim Measures Work Plan for the SWMU 68 landfill cover by November 2002.

SWMU 131 was identified in the 1990 RFA as the Storm Drainage System. Specifically, there are three creeks and six drainage ditches which discharge effluent from the CAFB. The Department approved NFA for SWMU 131 in August 2002 qualified by the condition that the storm sewer system is still active and remains a potential pathway for contaminants in the event of a future release(s). Further RCRA investigation of the storm drainage system at CAFB will be pursued in the event of base closure.

AOC K was identified in the 1990 RFA as Golf Course Creek (one of the creeks comprising SWMU 131) and Storm Drainage Ditch. The CAFB is completely fenced. Access onto the base by unauthorized personnel is restricted. The primary media of concern are surface water and sediments. The Department has determined that there are no complete pathways of human health exposure based on restricted access to the site.

The Department issued a conditional approval for the SWMU 55 Interim Measures Work Plan (dated 10/27/00) for Additional Investigation and Removal Activities on October 31, 2000. Pursuant to the objectives outlined in this work plan, site restoration activities such as grading, revegetation, removal of potential source contamination, fence installation and signage were completed in an effort to eliminate human exposure.

Zone 2 has human exposure controls currently in place. The entire base is fenced and two guarded gates control access. Additionally, a substantial amount of Zone 2 is fenced. The hazardous waste yard, long-term storage area and Civil Engineering compound are fenced and access is controlled. Zone 2 is approximately 90% paved and is an industrial area located near the flightline. All construction, renovations and demolition, which would potentially disturb existing conditions, must be routed through the CAFB environmental office prior to respective field activities.

At Zone 4, as an interim measure (2000), the base installed a treatment system (which is currently in operation) at the site and repaved the concrete-lined ditch. Again, all construction, renovations and demolition, which would potentially disturb existing conditions in Zone 4, must be routed through the CAFB environmental office prior to respective field activities. The Department anticipates the Interim Measures Report (addressing the 2000 field activities) by September 2002.

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Phase II and III RFI Work Plan, SWMU 55

Final Phase II RFI Report, SWMU 68

Final Supplemental RFI, SWMUs 74, 114, 138 and 144

Technical Decision Document to Support No Further Response Action Planned, SWMU
131 Storm Drainage System

1995 CAFB (Basewide) RFI Report

2000Draft Final Interim Measures Work Plan, Zone 4

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

| <u>Summary Exposure Pathway Evaluation Table</u> Potential Human Receptors (Under Current Conditions) | | | | | | | |
|---|------------------|----------------|----------------------|---------------------|---------------------------|-------------------|-------------------------|
| "Contami- nated" Media | Residents | Workers | Day- Care | Construction | Tress- passers | Recreation | Food³ |
| Groundwater | No | No | No | No | No | No | No |
| Air (indoors) | No | No | No | No | No | No | No |
| Soil (surface, e.g., <2 ft) | No | No | No | No | No | No | No |
| Surface Water | No | No | No | No | No | No | No |
| Sediment | No | No | No | No | No | No | No |
| Soil (subsurface, e.g., >2 ft) | No | No | No | No | No | No | No |
| Air(outdoors) | N/C | N/C | N/C | N/C | N/C | N/C | N/C |

³

Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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Instructions for Summary Exposure Pathway Evaluation Table:

1. For Media which are not "contaminated" as identified in #2, please strike-out specific Media, including Human Receptors' spaces, or enter "N/C" for not contaminated.
2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have assigned spaces in the above table. While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- X If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.
- If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s): The Department anticipates submittal of the Interim Measures Work Plan for the SWMU 68 landfill cover by November 2002. Although there is not a complete human exposure pathway at this site due in part to the existing cover, CAFB will install a landfill cap as an engineered control. Based on the review of SWMU 131 NFRAP, The Department approved NFA in August 2002 qualified by the condition that the storm sewer system is still active and remains a potential pathway for contaminants in the event of a future release(s). These issues will be addressed in the event of base closure. As stated in #2, the Department recommends submittal of a Phase II RFI Work Plan to address data gaps at AOC K.

Final Phase II RFI Report, SWMU 68
Technical Decision Document to Support No Further Response Action Planned, SWMU
131 Storm Drainage System
1995 CAFB (Basewide) RFI Report

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- 4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"** (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?
- _____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."
- _____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."
- _____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s)

- 5 Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?
- _____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).
- _____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.
- _____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

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Rationale and Reference(s)

Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

 X YE - Yes, "Current Human Exposures Under Control" has been verified.
Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at Charleston Air Force Base in Charleston, South Carolina 29404 EPA ID # SC3 570 024 460 under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

 NO - "Current Human Exposures" are NOT "Under Control."

 IN - More information is needed to make a determination.

Completed by (signature) *Jamelle H. Ellis* Date 8-26-02
(print) Jamelle H. Ellis
(title) Environmental Engineer Associate

Supervisor (signature) *David Scaturo* Date 8-26-02
(print) David Scaturo, P.E., P.G.
(title) Manager,
(EPA Region or State) South Carolina

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Locations where References may be found:

1. South Carolina Department of Health and Environmental Control, Columbia South Carolina
2. Charleston Air Force Base, Charleston, South Carolina 29404-4827

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